Welcome to the Wumpus World

Instructor:
Bram Van Heuveln
Wumpus World Generator:
Mark,Song,Alayn,Jessica,Samantha, Ian
Wumpus World Simulator:
Mitesh, Mindy, Xinyan, Qiao, Emma, Kevin

Installation Instructions

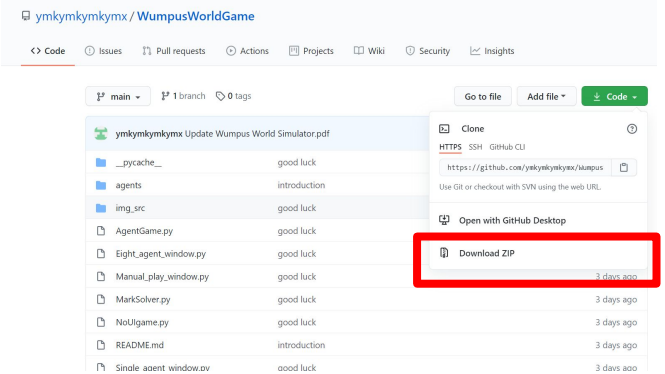
Before running the code, make sure you have installed:

- Python: https://www.python.org/downloads/
- Tkinter: https://tkdocs.com/tutorial/install.html
- Pygame: https://www.pygame.org/wiki/GettingStarted
  - cmd prompt (windows): py -m pip install -U pygame --user
- Win32ui: https://pypi.org/project/pywin32/
  - cmd prompt (windows): pip install pywin32

Python and tkinter should be installed if taking CS1
Mac/Windows/Linux will have different installation instructions for each step

Download and Run Wumpus World

Link: https://github.com/ymkymkymkymx/WumpusWorldGame

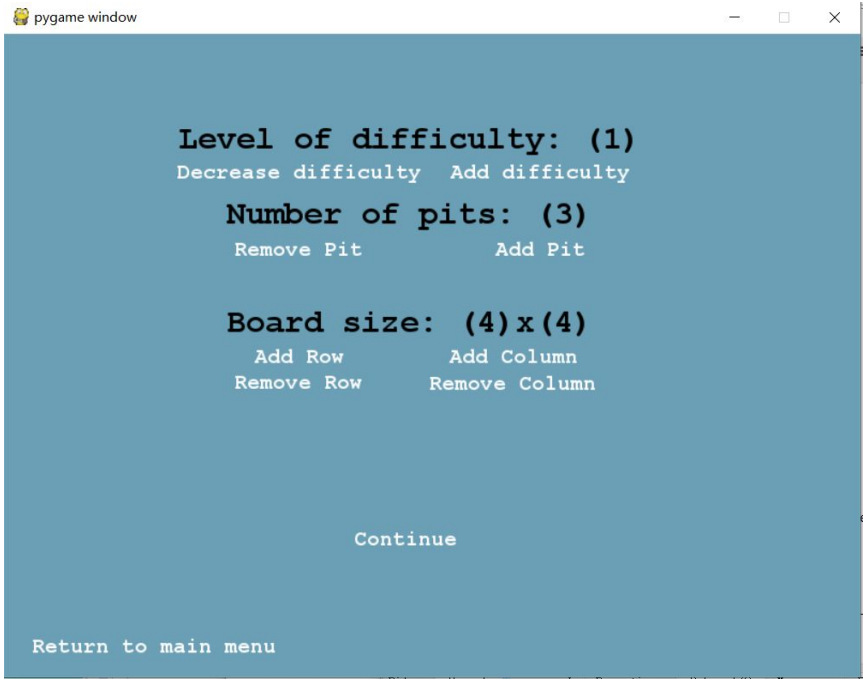


Option 1: Download ZIP file directly from the GitHub browser and move it into your working directory

Option 2: Open command prompt
cd to directory you want to work in
git clone https://github.com/ymkymkymkymx/WumpusWorldGame

To run program, change to the WumpusWorld directory and run gui3.py in the command prompt: cd WumpusWorldGame
python gui3.py

Intro to the UI windows



Open the gui3.py and enter the game you will see this page.
On this page you can set the level of difficulty and the Map information for manual game and single agent game.
There are four levels of difficulty. 0 and 1 are the levels that you don't need to shoot the wumpus; 2 and 3 are the levels that you have to shoot the wumpus.
There are some combination of level and pits that cannot generate a map and cause the program to crash, just try more reasonable combinations when it happens.

Intro to the UI windows

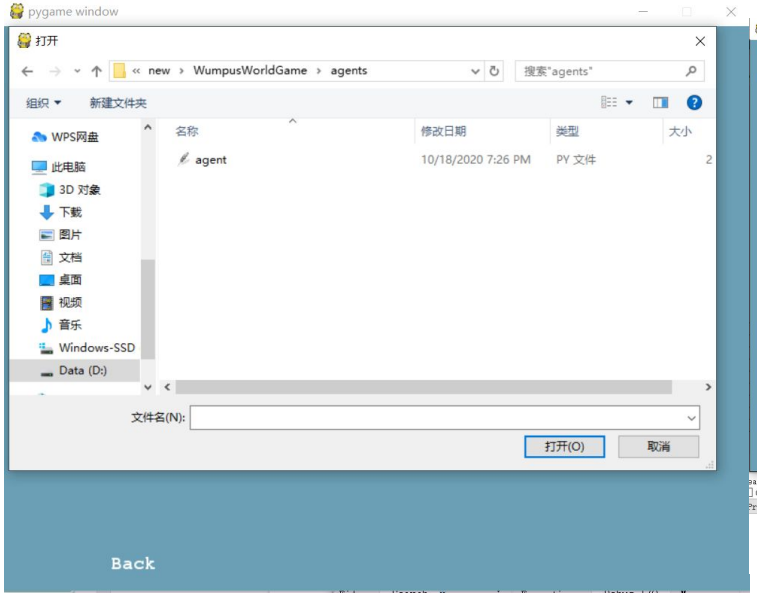
There are four modes to choose.

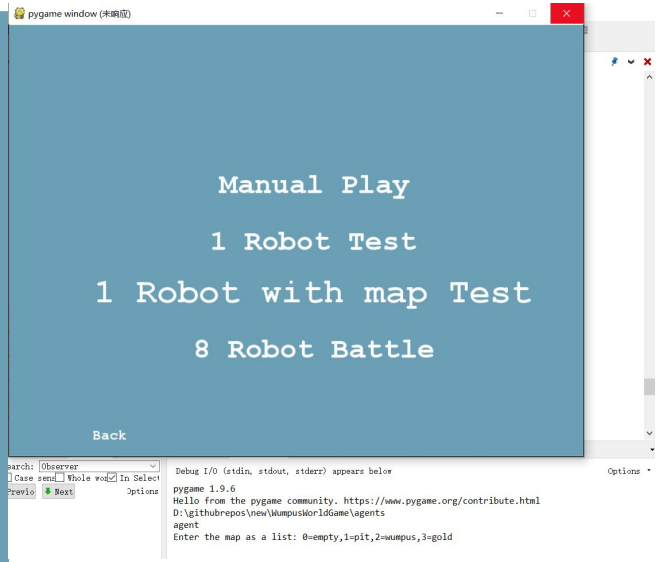
The Manual Play will start a game that you can play manually.

The 1 robot test will pop a window and ask you to choose your agent file and then let you play.

The 1 robot with map test will also ask you to enter a map in the command line.

Intro to the UI windows





As you can see on the second picture, it ask you for a map.

Intro to the UI windows

```
Exceptions   Debug I/O   Messages   Python Shell   OS Commands

Debug I/O (stdin, stdout, stderr) appears below

pygame 1.9.6
Hello from the pygame community. https://www.pygame.org/contribute.htm
D:\githubrepos\new\WumpusWorldGame\agents
agent
Enter the map as a list: 0=empty,1=pit,2=wumpus,3=gold
[[0,0,0,1],[0,0,1,0],[0,1,0,0],[2,0,3,0]]
```

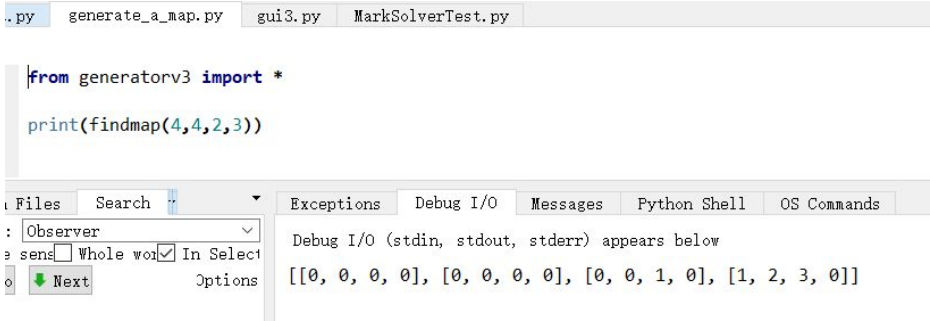
Enter a map like this will let you start the game.
The robot will start at (0,0) of the map. Below is the representation rule of the map:

```
board[i][j]'s up and down, left and right will be like:
                                    i=2  *   *   *
                                    i=1  *   *   *
                                    i=0  *   *   *
                                        j=0 j=1 j=2
And the robot will always start at point (0,0).
```

Intro to the UI windows

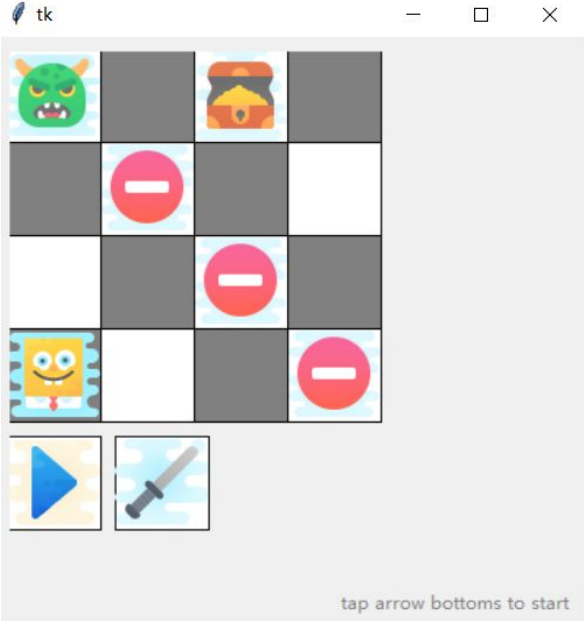
You can run generate_a_map.py to generate a random map.

The findmap function's input is:
findmap(sizex,sizey,pits,difficulty)



Some maps that I used to test my robot:
[[0,0,0,0],[0,0,0,0],[0,0,0,3],[0,0,0,0]]
[[0,0,2,0],[0,0,0,3],[1,0,0,0],[0,0,0,0]]
[[0,0,0,1],[0,0,2,3],[1,1,0,0],[0,0,0,0]]
[[0,0,0,1],[0,0,1,0],[0,1,0,0],[2,0,3,0]]

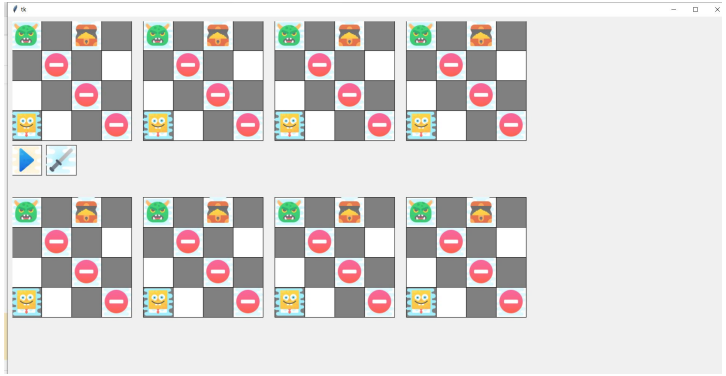
Intro to the UI windows



After entering the map, this window will pop up.
The blue button will let the robot automatically step through the whole game.
The sword button will let the robot make 1 step.

Intro to the UI windows

The 8 robot will ask you to choose 8 robots 1 by 1. Then it will ask you to enter a map on the command prompt. And then you will have 8 robots on screen like this:



After the game it will print out the result in the command line like below.
You can enter anything and the game will restart on the same map.

```
Debug I/O (stdin, stdout, stderr) appears below

00000 00000 00000 00000
00000 00000 00000 00000
00000 00000 here! 00000

FAIL
PIT
Agent 1 lose
Agent 2 lose
Agent 3 lose
Agent 4 lose
Agent 5 lose
Agent 6 lose
Agent 7 lose
Agent 8 lose
finished
```

If you cannot use the gui3.py:

limitedUI.py is based on tkinter only.

NoUIgame.py is a text based game.

These two are different versions of 1 robot with map test.

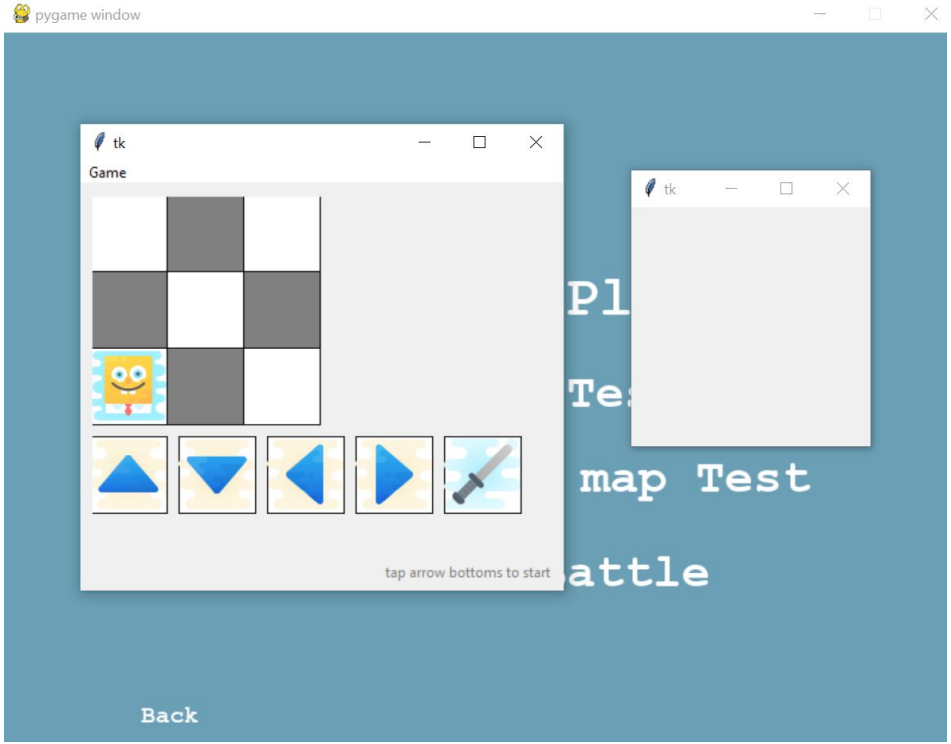
They assume you will put your agent.py under agents folder.

Enter the agent file name without the .py when it asks you for agent.

Enter the map like before as it asks you for the map.

Important UI Information

In gui3.py, two tkinter windows will pop up. Move the blank and smaller window out of the way to focus on the map. Once finished with the main tkinter window, exit out of **both** tkinter windows. The main pygame window will not continue the program until the smaller tkinter window is closed.



How to write a basic robot

The agent.py shows you the structure of a robot that will always move right.

agent.py | generate_a_map.py | gui3.py | MarkSolverTest.py

Agent | __init__

```python
class Agent:
    def __init__(self,sizex, sizey):
        ##sizex and sizey will give your agent the size of the map
        self.sizex=sizex
        self.sizey=sizey
        ##TODO: Put the variables you need for your agents here.


    ##TODO: define the functions you need here


    '''
    move(state) will read in the message from the game and return the move the agent will make based on the current information.
    This is the only function that will be called by the game and the name, param and return must not be changed.
    @param state will be a tuple (messages, 0)      0 is useless here.
           If you use a board which a list(list(set)) where the set keeps all the information about a node on the map,
           board[i][j]'s up and down, left and right will be like:
                                                i=2  *   *   *
                                                i=1  *   *   *
                                                i=0  *   *   *
                                                    j=0 j=1 j=2
           And the robot will always start at point (0,0).
           The state[0]: messages will be a list of strings which might include: "CONTINUE", "BREEZE", "STENCH", "GLITTER", "KILLED-WUMPUS","GOLD" .
    @return This function should return a string "move_up", "move_down" , "move_left", "move_right" , "shoot_up", "shoot_down", "shoot_right", "shoot_left" based on the current state.
    '''
    def move(self,state):
        ##TODO: Implement your algorithm here
        return "move_right"
```

How to write a basic robot

In the game, only the move() function will be called by the game environment and it should return a string like: "move_up", "move_down" , "move_left", "move_right" , "shoot_up", "shoot_down", "shoot_right", "shoot_left".

You can write your functions to choose from the strings above to return and the robot will move accordingly.

Thank you

Instructor:
Bram Van Heuveln
Wumpus World Generator:
Mark,Song,Alayn,Jessica,Samantha, Ian
Wumpus World Simulator:
Mitesh, Mindy, Xinyan, Qiao, Emma, Kevin